1907MNRAS..67..360E

A New Nebula. By the Rev. T. E. Espin, M.A.

On January 18, while looking for new double stars, I came across a bright nebula, which, as far as I am aware, is an unrecorded object. It was estimated to be about $5''$ in diameter and elongated north. On January 27 the nebula was seen for a few moments between clouds. On February 1 it was well seen, a conspicuous object, and equal to a 10 magnitude star. The elongation was very marked, and sometimes it looked like two nebulæ. The measures gave—

Major Axis	$6''\cdot90$
Minor Axis	$6\cdot35$

The major axis was found to be roughly at position $10^\circ\cdot5$. A small star was noted S*p*. On February 11 the position was determined from B.D + 33°,746. It was found to precede this star by $7^{s}\cdot80$, and to be $2'\ 25''$ south of it. On February 18 what appeared to be a star or nucleus was seen north and measured. It was also seen on February 22 and February 23, and measures made of it with great difficulty. The later observations seem to suggest a planetary nebula, with a small star at the northern edge. The following are my measures of the two stars near the nebula :—

Neb. and star A :—

		P	D		
	1907·1314	14°·9	4″·10		Mag. 13·0
	1424	13·3	4·75		
	1451	13·3	3·90		
Mean	1907·140	13·8	4·25	3 nts.	

Neb. and star B :—

	1907·0849	244·6	16·75		Mag. 12·0
	1314	244·3	17·05		
	1424	245·3	15·90		
	1451	238·4	17·05		
Mean	1907·126	243·1	16·69	4 nts.	

The place of B.D + 33°·746 for 1855·0 is—

$\alpha = 3^{h}\ 47^{m}\ 14^{s}\cdot89 \qquad \delta = 33^\circ\ 29'\ 14''\cdot7$ (*Bonn Obs.*, vol. vi.)

Professor Burnham observed the nebula with the 40-in. of the Yerkes Observatory on February 20 in moonlight and a sky not clear, and measured the star B as follows :—

P $238^\circ\cdot1$ D $17''\cdot86$

and also found for B.D + 33°·746 and neb.

P $213^\circ\cdot9$ D $177''\cdot87$ single distance.

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Observations of Occultations. By Rev. Leonard A. Williams, B.A.

(*Communicated by A. C. D. Crommelin.*)

First Series.

At Stoke Wake Rectory,
Blandford, Dorset.

Longitude, 2° 20′ 5″ W.
Latitude, 50 51 20 N.
Height above sea, 440 feet.

Star and Magnitude.	Disappearance G.M.T.	d	h	m	s
A Leonis 4·6	1905 May	12	8	44	27
γ Tauri 3·9	Sept.	19	10	35	40
Solar Eclipse—					
First con.	Aug.	29	23	45	19
Last con.		30	2	13	45

Second Series.

At Farningham Vicarage,
Dartford, Kent.

Longtitude, 0° 13′ 25″ E.
Latitude, 51 22 45 N.
Height above sea, 120 feet.

Star and Magnitude.		Disappearance G.M.T.	d	h	m	s
μ Ceti	4·4	1905 Dec.	8	5	34	26
χ Leonis	4·7	1906 April	6	7	3	27
ο Sagittarii	3·9	Nov.	19	5	29	30
ξ^2 Ceti	4·3	1907 Jan.	21	9	5	9
ν Geminorum	4·1		26	6	39	55

Method of determining time.—At Stoke Wake: Equal altitudes with sextant, and artificial horizon (mercury). At Farningham: Meridian observations with transit instrument.

Chronometer.—Deck watch in box, No. 08354, by Frodsham. Rate per diem for Jan. 1907, $-{\cdot}9^{\mathrm{s}}$.

Results.—The times are not *guaranteed* to the exact second; but they are assumed, with good reason, to be correct to 1·5 seconds.

1907 *January* 30.

Appendix to the above Paper. By A. C. D. Crommelin.

I have reduced Mr Williams' observations in the same manner as the Greenwich observations of occultations. The R.A., N.P.D., and parallax of Moon have been interpolated with second differences from the Nautical Almanac, and the semidiameter found by the equation log semidiameter = log parallax + 9·43542, this being the constant to reduce to Struve's semidiameter 15′ 32″·65, which is now used at Greenwich in the reduction of occultations. The R.A. and N.P.D. of the stars are taken with the Nautical Almanac values of their mean places and star corrections.

Then assuming—

True Time of Phenomenon = Observed Time + t^{s}
,, R.A. of Moon = Naut. Alm. value $+x'' + t \times \mathrm{mot^{n.}}$ in 1^{s}
,, N.P.D. . . . = ,, $+y + t \times \mathrm{mot^{n.}}$ in 1^{s}
,, R.A. of Star = ,, $+e$
,, N.P.D. . . . = ,, $+f$
,, Parallax of Moon = ,, $\times \left(1 + \frac{m}{1000}\right)$
,, Semidiameter ,, = Naut. Alm. Par$^{\mathrm{x.}}$ $\times {\cdot}272535 \times \left(1 + \frac{n}{1000}\right)$

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